



House Committee on Transportation and Infrastructure
Subcommittee of Water Resources and Environment Hearing
Testimony of Renée Victoria Hoyos
Executive Director
Tennessee Clean Water Network
March 31, 2009

Introduction

My name is Renée Victoria Hoyos, I am the executive director of the Tennessee Clean Water Network and the President of the Board of the national Clean Water Network. The Tennessee Clean Water Network's mission is to empower Tennesseans to claim their right to clean water and healthy communities by fostering civic engagement, building coalitions and advancing water policy for a sustainable future. We are located in Knoxville, Tennessee.

The Kingston Coal Fly Ash Disaster that occurred on December 22, 2008 is unprecedented in size and scope – 5.4 million cubic yards of coal fly ash spread over 300 acres of the Emory River and adjacent land. Although it is tempting to say that TVA is moving through uncharted territory, there have been other spills at coal ash ponds throughout the U.S. These spills have been considerably smaller. In 2005, Pennsylvania experienced a coal fly ash spill into the Delaware River and in 2002, Georgia experienced a spill into Euralee Creek. Immediately following TVA's December 22 disaster, a spill occurred at TVA's Widows Creek plant from a coal ash and gypsum pond. And just recently, on March 9, 2009, Maryland was visited with a coal ash spill that was creeping its way to Washington, D.C. before it was contained. Numerous other coal ash ponds have released their toxic contaminants, not through catastrophic spills, but slowly into underlying groundwater, such as at PPL's plant in Colstrip, Montana and at Duke's Gibson Generating Station in Indiana.

The disaster in Tennessee brings to light three substantial problems that the Network respectfully requests this Subcommittee to consider: (1) the urgent need for greater oversight of the TVA clean up in view of the substantial threat to health and the environment; (2) the need to prohibit the disposal of wet coal ash in waste ponds throughout the U.S.; and (3) the need to improve enforcement and strengthen regulations under the Clean Water Act (CWA) at coal-fired power plants.

Many lessons have been learned during these spills and releases, yet TVA has resisted assistance from experts from the field and held to the notion that getting into that river with hundreds of pieces of heavy dredging machinery is the best solution. We believe that this is an outdated and outmoded solution with known hazards that have been identified and ignored by both TVA and the agencies that regulate their activities. Current laws do not deal adequately with the potential and known hazards of coal fly ash. Enforcement is lax and permit writing relies too heavily on the applicant's concerns

outweighing the environmental objectives of the National Pollution Discharge Elimination System's (NPDES) goals.

Oversight and Regulation

Of great concern to the Network and its members is the lack of consistent regulatory oversight of the ponds and their discharges.

First, it is unclear if TVA is conducting this clean up under NEPA or the EPA's regulatory system. In order to fast track the dredging plan, TVA created an Environmental Assessment with a Finding of No Significant Impact. Frankly, there is significant impact to the river by dredging. TVA neither offered other solutions to dredging nor sought experts to assist them with issues that arose. We arranged for experts to advise both TVA and the agencies overseeing the clean up, but their services were rebuffed in favor of a dredging plan that is incomplete.

Current federal regulations have failed to address the hazardous nature of coal fly ash. By punting to the states, EPA has deferred responsibility for the regulation of coal fly ash. On at least two occasions, EPA has looked at this issue and each time chose not to further regulate coal fly ash. The Obama Administration will now consider regulating coal fly ash, which we heartily approve. However, EPA appears to have a hands off approach to TVA and is unwilling to call TVA to task for the spill, the inadequate response and the hastily constructed dredge plan.

The state agency, the Tennessee Department of Environment and Conservation (TDEC), fares no better in our estimation. The state NPDES permit was woeful in its lack of permit limits on the discharge from the dredge pond. TVA was only required to test for pH and total suspended solids. It is well known that heavy metals and radioactive material reside in coal fly ash¹, yet TVA was never required to test for them from their pond outfalls. Furthermore, the permit identified that a visual inspection of the pond dikes and toe areas be preformed quarterly by TVA and reports submitted annually to TDEC². However, the permit does not indicate any action that TDEC was required to perform if it was known that there were problems with the dike. A report dated February 2008³ indicated that there were problems with the pond walls. TDEC had a copy of this report in their files. The NPDES permit had expired in August of 2008. TVA was operating under the conditions of the expired permit in the absence of a new permit.

The lack of enforcement by state and federal agencies is disappointing and of great concern to the Network. The state's Commissioner's Order requested implementation of measures to prevent movement of ash into waters of the state, support for TDEC's review of all documents (we believe this to mean financial support), existing studies to explain how the dike failed, support (again, we believe this to mean financial support) and cooperation on an assessment of the impacts of the ash spill, a corrective action plan (CAP) that had no timelines, various requests for other documents and meetings all to be repeated until TDEC deemed no longer necessary. TVA could request a time extension for any deadline and have it granted based on good faith. TDEC requested a laundry list of items for which they would be reimbursed. There were no

¹ Radioactive Elements in Coal and Fly Ash: Abundance, Forms, and Environmental Significance, Fact Sheet FS-163-97, USGS Central Valley Region, October 1997.

² State of Tennessee NPDES permit, No. TN0005452, TVA- Kingston Fossil Fuel Plant, Expired August 31, 2008.

³ Annual Ash Pond Dike Stability Inspection, 2008, Tennessee Valley Authority, prepared by Jamie Dobson, February 15, 2008.

financial penalties to TVA who has been in violation of their permit since December 22, 2008 while state law allows for a \$10,000/day⁴ for every day the violation occurs.

EPA has not issued any enforcement actions to our knowledge. EPA acknowledged that TVA violated the Clean Water Act, but it assessed no penalty for the massive release of pollutants to the Emory River.

Concerns regarding the TVA dredge plan, phase I

We think the current dredging plan has an inadequate method for dealing with contamination of heavy metals throughout the activities of Phase I. The plan does not take into account other technologies for ash removal, nor does it have adequate plans for contingencies.

We are concerned about heavy metal contamination. Our experts have stated to the agencies that a turbidity curtain will not keep toxic metals from escaping the site and drifting downstream. While the plan cites “turbidity curtains and/or other engineering controls”, but does not specify what those controls are⁵.

Phase I is only concerned with dredging: developing a dredging plan, develop dredging methods; dredging the Emory; describe best management practices to control the effects on water quality from dredging; and, provide guidance for sampling, monitoring and analysis of the dredging operations⁶. No where does the plan allow for the exploration of other recovery technologies.

Water quality monitoring specified in the phase I plan is inadequate giving the knowledge that heavy metals and radioactivity exist in coal fly ash. Only pH, turbidity, temperature, dissolved oxygen and conductivity⁷ will be monitored. There is no mention of heavy metals and therefore no plan to deal with a toxic event should it occur. The only contingency in the plan is to increase testing further downstream should turbidity numbers rise above 20 ntus. While the plan states that they may add other constituents for testing, the only ones named are chlordane and PCBs⁸.

The ash dewatering plan brings up a concern that sluicing operations will allow heavy metals to be reintroduced to the Emory River via the temporary storage dredged material in the Ball Field area located south of the plant. To our knowledge there is no permit for the discharge of the sluice water at this site nor are there plans to monitor for heavy metals. Monitoring these ponds, according to the plan, is reduced to “visual observations” for “objectionable turbidity”. Unlike the monitoring regimen during the construction phase, there is no number of turbidity units that would trigger an action.⁹

Curiously, a table of heavy metals found in coal combustion waste appears in the phase I dredging plan¹⁰. There is a mention of data “assessed and compared to the TDEC Fish and Aquatic Life Use Classification”. We’re not sure what this means. Use Classification is a list of rivers and their subsequent uses. We think they might be

⁴ Tennessee Code Annotated section 69-3-115. Violations — Penalties — Judgment by consent.

⁵ Phase I Emory Dredging Plan, Kingston Fossil Plant Ash Recovery Project. Tennessee Department of Conservation Commissioner’s Order OCG09-001. Prepared by Shaw Environmental, Inc. 312 Director’s Drive, Knoxville, TN 37923. Page 1-1.

⁶ Ibid. page 1-2

⁷ Ibid. page 4-3.

⁸ Ibid. page 5-2.

⁹ Ibid page 5-3

¹⁰ Ibid page 5-5

referring to Fish and Aquatic Life Criteria, because they list the criteria in a following table. Yet, there is no indication of how or when they would test for these constituents.

In short, we find the dredge plant to be an oversimplified attempt to deal with the size of the dredging project. It does not entertain any other option but dredging. It ignores the effects of heavy metal contamination to the Emory, Clinch and possibly Tennessee Rivers. It contains no plan for ameliorating effects of heavy metals on the river systems. It simply gets the ash out fast.

The dredging of the Emory River commenced on March 20, 2009. It started a full week earlier than originally planned. The community was informed on March 20, 2009 at 2:00 pm that the dredging had started.

Flooding

One of the primary concerns that TDEC has articulated is the fear of flooding. This is perhaps why the dredging started one full week prior to the schedule dredging start date. While we are sympathetic to the concerns of flooding, there is no way that it can be avoided.

According to TVA, approximately half of the coal ash sludge released was deposited in the Emory River filling the channel to a depth of as much as 26 feet. TVA also partially dammed the Emory near its mouth by building a rock dam to prevent coal ash from being carried downstream by the current. Both the reduction in channel depth and the dam have created an increased risk of flooding upstream on the Emory River, which has no dams upstream to regulate flow. TVA acknowledged this by notifying riparian property owners upstream that the 100-year floodplain had been raised on their property (see attached).

The TVA coal ash release happened at a time when Watts Bar Reservoir, of which the lower Emory River is a part, was at its winter pool level, which is normally about 735 - 737 feet above sea level. Beginning in April TVA typically raises the level to summer pool levels, which are about 740 - 741 feet above sea level (http://www.tva.com/river/lakeinfo/op_guides/wattsbar.htm, accessed 3/27/09). This 4-to-5-foot increase in water level, together with the ash and the dam in the Emory River, has further increased concerns about flooding at a time when spring rains have started.

Furthermore, once the water levels increase, much of the coal ash along that is now above the water level along the shoreline of the Emory will be submerged and will be subject to transport with the current and further leaching of heavy metals. There is also a question of what is going to happen to the ash in the Swan Pond Embayment where a dam has been built once Watts Bar Reservoir is brought up to its summer pool level. Will all of this ash be submerged and subject to leaching of heavy metals?

Wet pond storage

The pond that failed was a wet storage pond. This method of storage of coal combustion waste is very risky. Of concern for the Network is the volume of water flowing through the sluice channels. For the sluicing of bottom ash alone, plants average almost 8.5 million gallons of water a day to process this waste. This water is exposed to

25 metals¹¹ all of which are toxic to humans and wildlife at certain doses. Aside from with the dangers of catastrophic failure of the structure, it is well known that these unlined, unregulated ponds contaminate ground water, pose human health risks and can irreparably harm wildlife as seen by the December 22nd disaster.

There are other technologies for handling coal combustion waste: chemical precipitation, aerobic and anaerobic biological treatment, constructed wetlands, zero-discharge technologies, all of which have been known and used throughout the United States since the 1980's. With these existing technologies, we no longer need wet storage of coal combustion wastes at any of our facilities. Certainly the amount of money needed to convert this and other TVA ponds to newer, less polluting technologies and thus preventing the disaster of December 22nd, seems minisculely low now that the clean up is underway at about \$1M/day¹². From January 1 – March 31, TVA has spent at least \$90 million dollars. That's enough for almost three dry storage ponds or the purchase and installation of 18 pond liners¹³. Considering that the clean up may well last for years and is estimated to cost almost \$1B, an investment in prevention may have prevented the disaster and been returned to the ratepayers within the year.

Water quality concerns

Currently, the Network's biggest water quality concern is the possibility that catastrophic selenium contamination that may occur if the current dredging plan moves forward. Selenium is a chemical element closely related to and often behaving like sulfur. In fact, most of its negative health impacts are due to excessive levels of selenium resulting in the substitution of selenium in place of sulfur in critical enzyme systems. When that substitution occurs, the enzyme systems do not function properly, and health is impaired.

Interestingly, selenium is an essential trace nutrient for humans and mammals. Its essential roles are subtle and the nutritional needs are low. Selenium is unusual in that the difference between the concentrations at which it is essential and at which it becomes toxic is very narrow. It is regarded as essential at levels of 55-70 micrograms per day (for adult humans), and becomes potentially toxic at levels only 5 to 10 times higher. The toxicology of selenium, like arsenic and antimony, is not well understood. It is apparently relatively easily removed from drinking water through relatively common water treatment practices.

Aquatic organisms are far more sensitive to environmental selenium exposures than land mammals. This is presumably due to the fact that they are in constant, intimate contact with water. Selenium accumulates in fish tissues through the food chain. Consequently, even if selenium at low levels is chronically present, it can accumulate to toxic levels in the tissues of fish and other aquatic organisms. There are numerous documented cases of lakes and streams that biologically collapsed due to chronic selenium exposure from coal ash.

¹¹ Steam Electric Power Generating Point Source Category: 2007/2008 Detailed Study Report, US EPA, Engineering and Analysis Division, Office of Water, 1200 Pennsylvania Ave, Washington DC, 20460, August 2008. pps 3-46 – 3-59

¹² Barker, Scott. "TVA welcomes state's oversight of coal-ash cleanup." *The Knoxville News Sentinel*. January 13, 2009.

¹³ Paine, Anne. "TVA rejected costly fixes." *The Tennessean*. January 1, 2009.
<http://www.tennessean.com/apps/pbcs.dll/article?AID=2009901040392>.

Dr. Bryce Payne has put forward his concerns from 15 years of working on coal fly ash regarding Se contamination both to the local community and to agencies working on this spill (see letter to Bob Tanner attached). According to Dr. Payne, the perfect conditions exist for Se contamination that has the potential to kill aquatic life in the Emory River and far into the Tennessee River if steps are not taken to reduce oxidation of the ash that may be caused by dredging. TVA and the Tennessee Department of Environment and Conservation were presented with the letter, participated in a conference call with selenium experts from around the country, heard all the concerns and then discarded them in favor of the approved dredging plan.

Dr. Payne's major concern is that dredging introduces oxygen into the ash pile. By oxygenating Se, it becomes more toxic. It becomes selenite – which binds to particles and is taken out of solution. If it becomes selenate, it does not bind to particles and is small enough to slip through turbidity curtains. Once it gets away there is nothing that can be done to recover it. It can flow down the river with the current for miles severely damaging aquatic life. We want to make sure that this doesn't happen.

Other water quality problems were seen almost immediately following the disaster. Preliminary data collected on January 8-9, 2009 by researchers from Appalachian State University and the Upper Watauga Riverkeepers Alliance indicated that six of seventeen heavy metals were found at levels that exceeded water quality standards for aquatic life criteria, including arsenic, barium, cadmium, copper, lead and selenium. Elevated levels of copper were observed in both the Clinch and Emory rivers. With the exception of copper, samples collected upstream and downstream of the ash spill area did not exhibit water quality violations for heavy metals. Due to the geology of the area it is probably only a matter of time before heavy metal intrusion in drinking wells will be found.

At the site of the spill from data collected January 8-9, 2009, Appalachian State researchers observed numerous fish with clogged gills. Healthy fish gills will look feathery and display a dark red color, but the fish closest to the site had gills that were dark brown, clumped and filled with ash. Fish absorb oxygen directly from the water across their gills, so if the gills are bunched and coated with sediment or ash, the fish will suffocate. In addition, several fish were observed with scrapes and lost scales. Both are conditions that may be attributed to stress or degraded water quality. The gut, intestines and anal cavity of one channel catfish was filled with ash. Three dead fish were observed downstream of the spill, but mortality was not discerned due to their advanced state of decomposition¹⁴.

Analyses of metals from gill, gonad, liver, spleen, muscle, gastric caeca, and stomachs of fish collected 2 weeks following the spill from the Emory River near the spill indicated substantial bioaccumulation of metals (especially lead and selenium)⁶. Of greatest concern, the levels of selenium in the fish gonads are at and beyond the known threshold of toxic impact for embryos. This indicates that either the fish had already taken up much of the selenium released to the ecosystem following the spill, or more likely, that they had accumulated it from the long-term release of selenium from the wet ash storage ponds at the TVA facility. Further release of selenium by the dredging of ash

¹⁴ Draft Preliminary Summary Report from Water, Sediment and Fish samples collected at the TVA Ash Spill on January 8th and 9th, 2009 by Appalachian State University, Appalachian Voices, Tennessee Aquarium and Wake Forest University. Unpublished. 2009.

from the Emory River and subsequent uptake by the biota in the aquatic ecosystem could push the fish gonad concentrations of this metal to the point of complete reproductive failure¹⁵.

Human health concerns

The Tennessee Department of Health (TDH) conducted a “health consultation” instead of a public health assessment in the area two weeks after the spill. They concluded after several more weeks that few people reported increased health problems and that some of the reported increases may be due to stress. TDH was slow to respond and appeared to not have an emergency contingency plan in place to respond to a crisis of this magnitude. While we do agree that stress was very high immediately following the spill and that a health consultation may be appropriate for short-term exposure, we are concerned that long-term effects of the spill are being ignored and feel that a full public health assessment is necessary to protect public health. There have been at least three requests of the Agency for Toxic Substances and Disease Registry (ATSDR) for a full public health assessment, which we feel is more appropriate given the scale of this event. (See Letter to ATSDR, March 9, 2009, attached.) To date, the ATSDR has not responded. ATSDR has the experience and the resources to conduct such an assessment, which is much needed. Furthermore, we have concerns that for many years prior to the spill people have been eating fish contaminated by heavy metals from discharge from the pond and may have health effects associated with long-term exposure to heavy metals.

One of the greatest health concerns the community has is breathing particulate matter from the spill site. Rapid drying and dusting can inundate the local community causing increases in respiratory problems such as asthma. Many residents complain of coughs that do not subside. There is little confidence that TVA can control for dust. The sheer size of the spill and increase in exposed surface area of the ash make dust control nearly impossible. Current attempts to seed and stabilize the site with straw have been futile with these materials carried downstream and built up on the banks of the river.

Testing of the coal ash at the disaster site reveals that a significant percentage of the ash (approximately 40 percent) contains particles smaller than 10 micrometers. It is well known that particles less than 10 micrometers in diameter pose a health concern because they can be inhaled into and accumulate in the respiratory system. Particles less than 2.5 micrometers in diameter are believed to pose the greatest health risks. Because of their small size (approximately 1/30th the average width of a human hair), fine particles can lodge deeply into the lungs. The tests of the Kingston ash reveal that 20 percent of the ash is comprised of such fine particles. We believe that the presence of these fine particles in the millions of tons of ash that sits in Swan Lake Embayment and along the shoreline on residential properties poses a grave hazard to human health, which will increase dramatically as the ash dries and temperatures increase. This risk has not been acknowledged by the Tennessee Department of Health. In fact, at the recent public meeting on March 5, 2009, the TDH declared erroneously that “[i]nhalation of the coal ash dust would have the same health affects as breathing other types of dust.” (TDH’s March 5, 2009 slide presentation is available at

¹⁵ Draft Preliminary Summary Report from Water, Sediment and Fish samples collected at the TVA Ash Spill on January 8th and 9th, 2009 by Appalachian State University, Appalachian Voices, Tennessee Aquarium and Wake Forest University. Unpublished. 2009.

http://www.state.tn.us/environment/kingston/pdf/comm_guid/030509RoaneCoMtgHealth.pdf)

Further, at the March 5 meeting, the Tennessee Department of Health made another surprising and erroneous statement-- that the form of As found in the ash was not harmful and in fact could be ingested with no harm. We find this to be an outrageous, dangerous and unfounded claim. (See http://www.state.tn.us/environment/kingston/pdf/comm_guid/030509RoaneCoMtgHealth.pdf at 12.) Lastly, one TDEC employee volunteered to swim the Emory River this summer to indicate that the river was safe for recreation - yet another outrageous remark leading us to believe that the agencies in charge of this work lack the necessary skills to adequately address the community's concerns.

In view of the above, it is abundantly clear that immediate intervention and oversight by agencies with more experience with disasters of this magnitude, like the ATSDR and EPA, is essential to protecting public health.

Denial of meaningful public participation

At the March 5th meeting in Harriman, TN, put together by state and federal agencies, the community was not allowed to ask questions of the speakers directly. They were instructed to put their questions on 3x5 cards. They were told that the cards would be grouped by subject and that they would take questions from the cards. The agencies talked for so long that there was no time for a question-and-answer session. The agencies took four questions from the cards, sorting through them until they found a question that they wanted to answer. Though the agencies agreed to stay later to answer any and all questions, three hours had elapsed, and people grew weary and left without asking their questions. No follow-up meeting was scheduled.

Clearly the current process allows no way for the affected community to participate meaningfully in the decision making process or to have their voices effectively heard. Because the state and TVA are making up the process as they go along, the public is shut out. If this disaster was treated as a federal superfund site, TVA would be required to comply with the National Contingency Plan (NCP), which provides a very clear and important role for the affected community. Under the NCP, a Community Involvement Plan must be created, public information repositories are established in the affected community, public meetings are held at all critical decision points, and public comment is solicited and considered prior to all major decisions. In addition, under Superfund, communities have the right to request Technical Assistance Grants, whereby citizens can hire their own technical advisor to guide them through the clean up process and help them to participate meaningfully.

Our community needs to be heard and to participate in the decisions that so gravely threaten our health and environment. We do not believe that meaningful opportunity will be afforded to us outside the Superfund regulatory process. If TDEC and TVA are allowed to continue to address this major disaster site in a haphazard manner-- cherry-picking mechanisms from NEPA, CERCLA and RCRA as they please, this multi-year, billion dollar cleanup will not have the benefit of valuable input from the community and it is guaranteed that their needs will not be adequately served.

The Network's vision is that Tennessee has environmental laws that are models for the nation, but those laws have a genesis in federal law. Without proper guidance from federal agencies such as the EPA, states are unable and unwilling to step past federal floors to create and enforce rules that are stricter than federal standards or strike their own paths towards greater environmental protection when EPA is silent. Our vision is for every Tennessean to know and exercise their rights to clean water and healthy communities. For these reasons, we respectfully ask that this committee direct EPA to begin the promulgation of regulations that will provide minimum requirements for the storage and disposal of coal combustion waste by the end of this calendar year and to treat this disaster as a national superfund site with all the community benefits it affords. Specifically, we request the following from the committee:

1. *Advise EPA to regulate coal fly ash as hazardous waste so that disposal of fly ash can be done safely.*

While we acknowledge that some of the fly ash can be recycled, the market is saturated and until there is a time when new markets open up for the reuse of fly ash it must be disposed in a properly sited landfill with a composite liner, leachate collection system, groundwater monitoring, post-closure care, and adequate financial assurance.

2. *Advise EPA to apply Superfund law at the disaster site*

Requiring cleanup under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) will ensure a more timely and complete cleanup and would facilitate meaningful public participation. Under this law, communities may be eligible for EPA grants in order to hire technical experts to assist them. Knowledgeable communities can be advocates for new technologies and greater scientific scrutiny. TVA will also be required to pay for a third party independent technical expert of the community's choice. Requiring TVA to follow the National Contingency Plan under CERCLA will help to ensure that the cleanup is accomplished according to the most stringent environmental standards and with meaningful public participation in all major decisions. Lastly, EPA should employ the Hazard Ranking System to score the site to determine its eligibility for listing on the National Priorities List.

3. *Require the creation of an Interagency Task Force to oversee the disaster cleanup.*

4. *Require that the final four TVA board members that will be chosen to fill vacancies have environmental and social justice backgrounds.*

Compel TVA to diligently and effectively perform its duties under its federal charter and mission to serve the public good and to support the well being and the development of the Tennessee Valley instead of working to expand and strengthen its own institutional interests.

Here are a few excerpts from their values statement:

- We value the safety of our employees and the public we serve.
- We show our commitment to safety in our behavior, performance, leadership, and teamwork.
- We are responsible for safety – our own, our teammates', and the public's.
- We think about safety 24/7 – at home and at work.

- We intervene to stop unsafe behavior or conditions, and appreciate others intervening for us
- We work on the right things.
- We set high standards and goals based on external benchmarks.

TVA has strayed far from their mission and values.

5. *Require TVA to convert the Kingston Plant, as well as all of its 11 coal-fired power plants, to dry disposal of ash in engineered landfills*

Storage of coal ash in wet ponds poses a substantial threat of catastrophic failure and of the migration of pollutants into underlying groundwater. Dry disposal of coal ash in engineered landfills greatly reduces these threats. TVA should be required to close all of its existing ponds by removing and disposing of the ash in landfills or demonstrating that the ponds pose no short or long-term threats to human health and the environment.

6. *Require EPA to adopt a "zero discharge" rule for coal combustion waste storage and disposal units at coal-fired power plants and require that Kingston's NPDES permit be revised to prevent further discharge of pollutants from the existing ponds;*

Since it is well known that heavy metals and radioactive material exist in coal fly ash ponds this is a reasonable request that should be made to all ponds in the TVA watershed.

7. *Request that ATSDR conduct a public health assessment*

A letter was sent on March 9, 2009 on behalf of citizens, scientists and environmental groups to ATSDR to request a public health assessment, pursuant to section 104(i)(6)(B) of CERCLA. To date no health assessment from ATSDR, nor any response to the citizen petition, has been forthcoming

8. *Request that EPA enforce with fines and penalties on TVA for violating their permit and the Clean Water Act.*

Enable and support competent, rigorous interpretation, application and enforcement of coal combustion waste and water quality protection laws and regulations.

9. *Require that TVA is liable for damages as a result of this unparalleled public health and environmental disaster.*

Although the Tennessee Valley Authority Act makes it clear that TVA “may sue and be sued in its corporate name,” 16 U.S.C. 831(c), TVA intends to claim that it is immune by virtue of sovereign immunity to being sued for damages for the coal ash disaster. The 4th Circuit Court of Appeals, however, recently held this language in the TVA Act is a “broad waiver of sovereign immunity” and that “it must be presumed that when Congress launched a governmental agency into the commercial world and endowed it with authority to ‘sue or be sued,’ that agency is not less amenable to judicial process than a private enterprise under like circumstances would be.” *North Carolina v. TVA*, 515 F.3d 344, 348-49 (4th Cir. 2008). Congress exempted TVA from the Federal Tort Claims Act, 28 U.S.C. § 2680(l), which applies to federal agencies, because it intended that legal claims “be exercised against the Tennessee Valley Authority exactly as they could have been exercised against ... private utility companies.” 79 Cong. Rec. 6563-64 (1946).

TVA has stated that it intends to claim that its release of over 5 million cubic yards of coal ash sludge into the Emory River and the surrounding community was a “discretionary function” in its role as a government agency dealing with matters of government policy. There is no “discretionary function” exemption in the TVA Act’s “sue and be sued” language, as there is in the waiver of sovereign immunity in the Federal Tort Claims Act. 28 U.S.C. § 2680(a). Putting legal hairsplitting aside, this argument is an affront to property owners who have suffered for over three months with sludge on their property and coal ash blowing around their neighborhoods.

TVA has not addressed the health concerns of the community or the emotional toll of life in a disaster zone and has only purchased properties in the most immediate area of impact and without any apparent rationale as to which properties are being purchased and which are not. If TVA is not going to comprehensively address the impacts of this disaster on the community, their only resource is through the courts.

In conclusion, I’d like to thank Chairwoman Johnson and the members of this committee for holding these hearings and giving me the opportunity to testify today. I hope that this is the first of many steps we will take into the future to repair the damage caused by this disaster and implement the preventative measures needed to ensure that this never happens again to any community in the United States.

Sincerely,

Renée Victoria Hoyos
Executive Director
Tennessee Clean Water Network

Attachments:

TO: Robert Tanner (EPW)
FROM: Bryce Payne, PhD

SUBJECT: Response to your request for a non-technical summary of information on “the dangers of selenium” (relevant to the TVA Kingston coal fly ash spill and related coal fly ash issues).

Bob,

For the sake of time I have not spell checked or otherwise thoroughly edited this communication, so bear with any such needed corrections. For the same reason, I have not waited for review by my colleagues before sending this along to you. I am CCing it to them and if there are any comments or qualifications they would like to make they can direct them to you, or me and I will pass them on to you.

For informational purposes, if you have not already done so, you might also want to look at the EPA info page on selenium health implications at <http://www.epa.gov/ttn/atw/hlthef/selenium.html>.

Selenium is a chemical element closely related to and often behaving like sulfur. In fact, most of its negative health impacts are due to excessive levels of selenium resulting in the substitution of selenium in place of sulfur in critical enzyme systems. When that substitution occurs, the enzyme systems do not function properly and health is impaired.

Interestingly, selenium is an essential trace nutrient for humans and mammals. Its essential roles are subtle and the nutritional needs are low. Selenium is unusual in that the difference between the concentrations at which it is essential and at which it becomes toxic is very narrow. It is regarded as essential at levels of 55-70 micrograms per day (for adult humans), and becomes potentially toxic at levels only 5 to 10 times higher. The toxicology of selenium, like arsenic and antimony, is not well understood. It is apparently relatively easily removed from drinking water through relatively common water treatment practices.

Aquatic organisms are more sensitive to environmental selenium exposures than land mammals. This is presumably due to the fact that they are in constant, intimate contact with water. Selenium accumulates in fish tissues. Consequently, even if selenium at relatively low levels is chronically present, it can accumulate to toxic levels in the tissues of fish and other aquatic organisms. There are numerous documented cases of lakes and streams that biologically collapsed due to chronic selenium exposure.

The environmental chemistry of selenium is complex, but constraining the discussion to selenium associated with coal fly ash (CFA) simplifies the discussion. There are only two forms of selenium typically associated with CFA, selenite and selenate.

In the coal furnace the selenium in coal is burned to the form of selenate, most of which is incorporated into the glass which very nearly all coal fly ash particles are made of. Some of the selenate formed in the furnace is not fused into the CFA glass and remains soluble. The soluble portion, perhaps 0.1 to 1% of the total selenium, is dissolved by the slurry water used to carry the ash from the power plant to the ash settling pond. When the ash settles in the pond, the slurry water carries that dissolved selenium into the water body receiving the effluent from the pond. This can be, and in the TVA Kingston case does appear to be, a substantial amount of selenium.

Once the ash has settled into the pond, normal mineral weathering of the CFA glass begins. This is a natural and unavoidable process (see SOME BASIC CHEMISTRY AND COAL FLY ASH below). During weathering the major elements, aluminum, iron, oxygen, and silicon, dissolve and recrystallize to form stable, crystalline compounds called secondary minerals. These secondary minerals form as extremely small particles, often apparent as accumulating deposits on the CFA glass particles. Because they are so small and mineralogically young, they may be relatively easily dislodged from the CFA particles surfaces if physical disturbance of the ash occurs.

Minor and trace elements, like selenium and arsenic, are also dissolved during the weathering process. These trace elements do not fit into the crystalline structure of the forming secondary minerals. So, they tend to remain in solution. Since there is limited or no movement of water in the ponded ash, these minor elements undergo their own changes in response to their new chemical environment. In the case of selenium, and mostly because of restricted oxygen supplies, the dominant selenium form changes from selenate to selenite.

As it turns out, the surfaces of the forming secondary minerals have a strong adsorptive affinity for selenite (and related forms of arsenic). Once present, the secondary minerals begin to adsorb all or nearly all the dissolved selenium in the ash pond. We now have, because of electron microscopy work by Shea Tuberty and colleagues at Appalachian State University on TVA spilled ash, direct measurements indicating that the secondary minerals may contain 250 or more times the concentration of arsenic in the original CFA particles. At this time we do not have such direct measurements for selenium due to its relatively lower concentrations and limited opportunities for data collection (only two electron microscopy efforts to date).

As long as the ash is not disturbed the selenium (and arsenic) remains fairly tightly bound to the secondary minerals attached to the ash particle surfaces. If, however, the ponded ash is disturbed so that either oxygen levels increase, or the small secondary mineral particles are dislodged and moved to areas with higher oxygen levels, the selenium stabilizing process is undone. The selenite converts back to selenate. The adsorptive affinity of the secondary minerals for selenate is about 10 times less than for selenite. So,

the selenium is no longer adsorbed by the secondary minerals, and dissolved selenium levels rise. How high and how fast depend on a number of factors, but the amount released can be considerable.

The danger now presented by the TVA spill dredging clean up plans can be appreciated in terms of selenium. Fish tissue samples taken and analyzed so far (again Appalachian State University data) suggest the fish in the Emory and probably Clinch Rivers already contain toxic levels of selenium. Inferences I have made from very limited data suggest the local sediments in the river might have contained substantial selenium before the ash spill, presumably from 50 years of discharging ash settling pond water into the river. The fish and similarly vulnerable biota in the Emory-Clinch river system simply will not be able to tolerate an additional selenium load.

The planned TVA conventional dredging operation will optimize conditions for selenium release. There will be intense mechanical disturbance of the ash deposits in the river by the dredge machinery. During that disturbance the secondary mineral particles will be dislodged and the ash will be intimately mixed with well oxygenated river water, raising the oxygen exposure of the selenite adsorbed on the secondary minerals. The transformation from selenite to selenate will begin shortly thereafter and continue as long as the oxygen levels remain elevated. There is nothing in the TVA dredge plan to indicate that the ash processing or temporary storage measures will do anything but further the increase to more oxygenated conditions and sustain the selenite-to-selenate conversion and consequent release of dissolved selenium. The plan even suggests that dissolved metals might be removed during processing of dredged ash through the ash settling pond. At least in the case of selenium, dissolved levels should be expected to increase.

To complicate the situation further, there is often a delay between the initial change to more oxygenated conditions and the actual appearance of increases in dissolved selenium. Experience suggests the delay under field conditions might be in the range of 1 to 2 months, perhaps less, perhaps more. The important point is that if there is such a delay before unacceptable increases in dissolved selenium levels are recognized, and even if dredging were halted entirely in response, nothing could be done to prevent the release of most of the selenium in the ash already dredged to that point. That is, as far as selenium goes, if there are toxic impacts, there is no backing up or undoing those impacts of a conventional dredging operation once it has moved any substantial amount of ash. In fact, because the selenium release rate will lag behind and be slow relative to the rate at which dredged ash will accumulate, it can be reasonably expected that once selenium levels start to rise, the rise will continue to get faster each day that dredging continues and for some time after it stops.

Still another complication is the dislodging of the very fine secondary mineral particles from the original ash particles. Field experience suggests that these particles are so fine that presence of substantial amounts may not be apparent to visual observation. They will likely either readily pass through or clog up silt curtains. They are too small to settle out of suspension and may drift downstream unobserved for unpredictable, and

potentially long distances. They can be expected to be substantially enriched with selenium and arsenic compared to the original ash particles. It is reasonable to expect that one or the other or both these toxic elements will become dissolved at some point along the released particles journey. At present we do not know how much of these very small secondary mineral particles there are, their toxic element contents or probable release rates if they escaped the dredge and ash processing confinement efforts.

Hope this helps. If you need anything further, let me know and I will do what I can to help.

When you would like to discuss alternatives to the planned dredging give me a call.

Regards,
Bryce Payne, PhD
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SOME BASIC CHEMISTRY AND COAL FLY ASH

There are several aspects of the chemistry of coal fly ash (CFA) that you should consider. I will try to relate them in terms of the initial formation and subsequent transformations of CFA.

Elements are continuously forced to arrange themselves into compounds and forms that are stable in the environment in which they exist. Some compounds are unstable and when the environment changes the elements in them rapidly re-arrange themselves into compounds that are stable under the new conditions. A relevant example might be coal exposed to air. If the temperature rises to the flash point of coal, the carbon will suddenly burn, combining with oxygen in the air to form another compound, carbon dioxide. At high temperatures in air, carbon dioxide is the stable form of carbon instead of solid carbon in coal. Other compounds are more stable and the elements in them cannot re-arrange themselves so readily. A related example could be the carbon in diamond. The structure of the arrangement of carbon atoms in diamond is much more stable than in coal. Diamond will not burn at the same temperatures as coal, though it can if the temperature or pressure get high enough. So, even though a compound occurs in a form that has been around for a long time, say the mineral in a rock, if that rock is not under the same conditions in which it formed then it is changing. The elements in the rock are rearranging themselves into new compounds that are stable in the new environment. These changes are occurring all time, all around us.

CFA forms as elements and compounds when minerals vaporized from the burning coal condense in the rising flue gas. Though cooler than inside the furnace, temperatures are still high when the minerals condense. The elements condense as a hot, more or less random, liquid mixture of fused elements and compounds that were in vapor form at the location and time of condensation. That molten droplet of elements and compounds then cools quickly and solidifies to form a glass, a solid with no crystalline structure. We are all familiar with commercially produced glass, and that it is a chemically stable compound. In fact, glasses are only moderately stable. Just like everything else, once out of the hot environment in which it formed, the elements in glass try to re-arrange themselves into more stable arrangements. So, it is with CFA.

How fast the rearrangements will occur depends on how much active surface of the glass is actually exposed to the new environmental conditions. Take a pane of glass in a window as an example. Only a very small portion of the pane of glass is actually exposed to the surrounding chemical environment, probably air. The chemically exposed portion is only a very thin layer on the surface of the glass in the pane. Think about a square glass pane 1 foot by 1 foot by 1/4 inch thick. It will have a weight around 2 pounds while the two faces each expose 1 square foot of glass surface to the environment, or 2 square feet of total exposed surface areas. (To simplify I am ignoring the minor surfaces of the 1/4 inch wide edges.) Put another way we can say the glass in the pane has a surface area of 1 square foot per pound. Now if that same amount of glass were in the form of a cube, it would be about 3 1/3 inches on each face. The surface area of each face would be 3.3 inches x 3.3 inches, or close to 11 square inches. The total area of all six faces of the cube would be close to 66 square inches, or a little less than 1/2 a square foot. So the same amount of glass in the shape of a cube has only 1/4 the exposure to the environment that a 1/4-inch thick glass pane has.

Something very important happens to the amount of glass exposed to the environment when glass particles get smaller. CFA particles are glass spheres, but to make the illustration simpler let's use glass cubes and say a cubic foot of glass weighs 100 pounds. So, if we start with a 1-foot cube of glass it will weigh 100 pounds and have six faces, each with an area of 1 square foot for a total surface area of 6 square feet. That is, glass in a 1-foot cube has 6 square feet of surface for each 100 pounds. Now, if the same amount of the same glass were in the form of 1-inch glass cubes, then there would be 1728 of them. Each cube would have six 1-inch square faces and, so, a total exposed surface area of 6 square inches on each cube. All 1728 of them together would have 6 x 1728 or 10368 square inches which is 72 square feet. So, if we decrease the size of the 100 pounds of glass cubes from 1 foot to 1 inch, that is, make each side of each cube 12 times smaller, the glass surface exposed to the environment increases 12 times. This relationship is constant no matter how much smaller the cubes of glass get, and whether we talk about spheres or cubes.

Now consider the exposed surface area of CFA glass. A solid cubic foot of CFA glass will have a weight in the neighborhood of 120 pounds, and a surface area of 6 square feet. CFA glass, though, actually occurs as beads that are a few hundred to tens of thousands of times smaller than a cubic foot, or a window pane. That is, compared to say

window glass, the glass in CFA has thousands of times more surface exposed to the environment. Consequently, thousands of times more of the glass in CFA is trying to change into new forms and compounds more stable in its new environment. Glasses are pretty stable compounds, but when present in the form of very small particles, like CFA, glass can chemically change at rates faster than we perceive to be normal. On the interesting uses side, this means CFA can be mixed with common bonding agents and react quickly to form remarkably strong, concrete-like materials. I have myself prepared blends that become rock hard within a few minutes. In fact, the bonding can be so rapid that the mix is unworkable. CFA is blended into commercial concretes to improve workability and final strength.

Moving on, so we have lots of tiny glass beads with a large surface area that is probably reacting to form new, more stable compounds. What does that mean? Basically it means that the elements in CFA are constantly, though still relatively slowly, re-arranging themselves into new compounds. In soils this constant, slow change from one mineral form to another is known as weathering. If flowing water is not a prominent factor during weathering, then most of the new minerals will be crystalline because crystalline forms are usually more stable arrangements. Crystal arrangements, though, can only accommodate certain elements in their structure. Some elements in the glass simply will not fit into the forming crystalline structure. CFA glass is a more or less random collection of elements that were in the vicinity at the time the glass condensed, mostly silicon, aluminum, oxygen, and iron. These four elements have very stable crystalline mineral structures that they like to form. Other elements do not typically fit into those crystalline structures. Those elements are basically excluded as the minerals form, and have to find their own stable form in the new environment, which now includes the newly formed crystalline minerals. These phenomena are fundamentally important to understanding the potential for release of toxic elements from CFA and the behavior of selenium in and released from CFA.

TVA's Mission and Values.

TVA Mission: Serving the Valley Through Energy, Environment, and Economic Development

Our Values:

- Safety

We value the safety of our employees and the public we serve.

We show our commitment to safety in our behavior, performance, leadership, and teamwork.

We are responsible for safety – our own, our teammates', and the public's.

We think about safety 24/7 – at home and at work.

We intervene to stop unsafe behavior or conditions, and appreciate others intervening for us.

- Integrity & Respect

We treat each other with integrity and respect.

We do what we say we will do.

Our actions and words are consistent, honest, and ethical.

We work to earn each other's trust.

We value everyone and everyone's work.

We assume innocence.

- Honest Communication

We listen to understand. We speak to be understood.

We give and receive meaningful feedback.

We seek other opinions. We value different perspectives.

- Accountability

We work on the right things.

We are accountable for results.

We follow the rules. We use TVA resources wisely.

- Teamwork

We play on a bigger TVA team.

We value a diverse workforce.

We collaborate. We strive for engagement.

- Continuous Improvement

We set high standards and goals based on external benchmarks.

We are self-critical. We innovate and seek new ideas.

We investigate and solve problems. We learn from our mistakes.

- Flexibility

We welcome and adapt to change.

We respond quickly to customer needs.

March 9, 2009

Sent by email and/or fax

Sue Neurath, M.D.
Acting Administrator
Agency of Toxic Substances and Disease Registry (ATSDR)
4770 Buford Hwy NE
Atlanta, GA 30341

Re: Petition for Public Health Monitoring and Long-term Assessment of
the Area Affected by the Kingston, Tennessee TVA Ash Disaster

On December 22, 2008, an impoundment for coal ash sludge failed at the TVA Kingston Fossil Fuel Plant in Roane County, Tennessee. As a result of this failure approximately 5.4 million cubic yards of coal ash sludge and contaminated water were released onto about 300 acres of land and into the Emory and Clinch rivers. The contaminated area of ground and river extends for a mile up and down the river. The majority of this waste remains in the rivers and on the land. The release continues to endanger the surrounding environment and the inhabitants of the area as well as potentially the inhabitants that live downstream and downwind of the site. The communities adjacent to the site are exposed to fly ash contamination on the ground, in the air, in their homes and along the river through numerous pathways including inhalation, ingestion, and direct contact.

Affected residents have previously submitted at least two petitions in January 2009 to the Agency for Toxic Substances and Disease Registry (ATSDR) for a health assessment. Pursuant to section 104(i)(6)(B) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA):

The Administrator of ATSDR may perform health assessments for releases or facilities where individual persons or licensed physicians provide information that individuals have been exposed to a hazardous substance, for which the probable source of such exposure is a release. In addition to other methods (formal or informal) of providing such information, such individual persons or licensed physicians may submit a petition to the Administrator of ATSDR providing such information and requesting a health assessment. If such a petition is submitted and the Administrator of ATSDR does not initiate a health assessment, the Administrator of ATSDR shall provide a written explanation of why a health assessment is not appropriate.

42 U.S.C. § 9604(i)(6)(B). ATSDR has not yet provided a formal response to these petitions. Apparently, in response to these petitions, the Tennessee Department of Health (TDH), acting on behalf of ATSDR, has initiated a series of health consultations.

This response is clearly inadequate. TDH was slow to respond to the initial event and did not appear to have an emergency contingency plan of action in place to respond to a spill of this magnitude. Moreover, it also took them more than two weeks to enter the field to begin collecting survey information that should have been collected in a more timely fashion in the initial days following the event. Additionally, it took TDH several more weeks to release this vital information of the survey to the public. The report issued was narrow in scope and did not adequately address all the attendant health issues in question. For example, TDH has consistently underplayed the immediate and long-term risks that fly ash poses to the affected population. At this point in time, despite the assistance provided to them by the Centers for Disease Control and Prevention (CDC), it is questionable whether the TDH has the capacity and resources to undertake a thorough and lengthy health assessment that is required in a disaster of this magnitude.

Furthermore, a full “public health assessment” performed by ATSDR and not a “health consultation” by TDH is needed to find out if people are being exposed to hazardous substances and, if so, whether the exposure is harmful and should be stopped or reduced. The facts surrounding this disaster dictate that environmental and health scientists from ATSDR must take the lead in the investigation. The Agency’s proven ability to properly assess a situation of this magnitude needs to be recognized. While a health consultation may be appropriate for short-term threats, the circumstances surrounding this site clearly indicate that a long-term, in-depth investigation along the lines of a full health assessment, performed by an experienced federal agency with sufficient resources, is the most prudent way to proceed.

Thus the undersigned groups and individuals once again petition ATSDR for a public health assessment that investigates the multiple pathways of exposure and assesses the long-term impact to the several hundred residents that live in close proximity to the site from the many hazardous constituents contained in the coal ash and contaminated water, soil and dust.

Data gathered by the Tennessee Valley Authority (TVA), nongovernmental organizations (NGOs) and university researchers reveal a wide disparity in the levels of contaminants found in surface water in the vicinity of the disaster. These conflicting data cause great uncertainty and concern about possible short and long-term health impacts. Data gathered by some indicate violations of both U.S. Primary Drinking Water Standards and Tennessee Water Quality Criteria for multiple parameters. While these exceedances were only found in surface water and not in drinking wells, they have generated concern about potential deleterious affects on the nearby population. Some water samples contained concentrations of arsenic, barium, cadmium, chromium, lead, mercury, nickel, and thallium that exceeded water standards.

Data generated by TVA, EPA, the Tennessee Department of Environmental Conservation (TDEC) and NGOs indicate that levels of hazardous constituents in the coal

ash deposited in the river and throughout residential areas are significantly above levels that are safe for residential soils. Contaminants of concern include arsenic, which is a potent carcinogen, and vanadium. Yet none of the agencies have addressed the threat that this ash poses to residents through inhalation, ingestion or direct contact.

According to a health survey conducted by TDH with the assistance of the CDC, nearly half the respondents reported fly ash present in their yards, and 33% reported that their shoes or clothing had been in contact with fly ash (February 5, 2009). While most respondents (62%) of the 324 households that were surveyed reported no change in health status, 33% reported a worsening of one or more symptoms that included headaches, wheezing, and shortness of breath (5% of the residents surveyed reported they “didn’t know”). It should be noted that this survey was not conducted until 2-3 weeks after the event.

While the report concludes “most people living close to the spill did not report any change in health status at the time of the survey,” the 33% of those who reported the above symptoms must not be dismissed. Moreover, there has been widespread reporting in the media of individuals living in the affected area who have reported similar symptoms as well as coughing, sore throat, fever, nausea, fatigue, and headaches. While the accuracy of these reports cannot be monitored scientifically, neither should such symptoms be ignored altogether. Such reports are suggestive of exposure to high pH fly ash that contains elevated levels of arsenic. Previous long-term studies of environmental disasters suggest that we sometimes ignore such self-reporting at the peril of public health. The continued downplaying by TDH of the potential, serious harmful effects of fly ash on the affected population from the early days of the spill up to the recent issuance of their health survey report serves to underscores their failure to recognize the potential, serious health threat of the presence of fly-ash to the general public.

The airborne contamination by fly ash remains a potential threat to the adjacent communities and those living downwind. The TVA responded to the event by dropping straw and seeds on the fly ash and spraying the area with a vinyl compound and then reassuring the affected population that these measures would protect them. Such measures and reassurances are an insult to the nearby households because the measures were taken during cold weather when seeds were unlikely to sprout and because the pH levels of the fly ash seriously deter seeds from sprouting. Additionally, the aerial spraying of the vinyl compound presented a drifting hazard to nearby residents and households.

In the short term, the presence of such a large amount of fly ash presents a health threat for many reasons including the fact that there have been reported and observed sharp gusts of wind on the site that has made the fly ash airborne and respirable. The TVA has asserted that such events were merely “fog,” despite meteorological observations to the contrary. Finally, the TVA has reported that the site clean up will take several years, and thus the long-term threat of airborne exposure will persist far into the future. The TVA’s and the TDH’s assessments of only short-term exposure of fly ash fails to adequately acknowledge and address the reality of continued exposure that could

result in significant adverse health impacts. Testing has confirmed that a significant percentage of the coal ash contains particles that are respirable (below PM 2.5) and are capable of penetrating into sensitive regions of the respiratory tract. Thus the ash poses a significant and immediate health threat that has not been evaluated or addressed.

Other major health concerns to the community include the TVA's and TDEC's plan to institute dredging to remove ash and debris from the main channel of the Emory River. The plan has generated a number of concerns including the fact that this plan only addresses the main channel of the river and does not address the great majority of the fly ash deposition in the waterways including the sloughs and bays of the Emory River along Swan Pond Road and Swan Pond Circle Road where a vast number of residents live.

Moreover, some residents are concerned that the dredging operations, as proposed, could stir up the radioactive deposits in the river bed that are the result of radioactive contamination from the nearby Oak Ridge National Labs. The potential resuspension of the radioactive sediment is thought, by some, to potentially exacerbate the contamination of the Emory and Clinch Rivers. The Clinch River is of great concern since it is a major source of drinking water for municipalities down river.

An additional concern is the TVA's proposed plan to deposit recovered fly ash sludge in a temporary holding impoundment closely adjacent to the river, thereby generating concern over the possibility of another disastrous event and the continued contamination of the Emory River and surrounding area.

All of these concerns are further fueled by the perceived haste with which the dredging is to take place. Citizens and environmental groups want to ensure the safety of the proposed operations by the transparency of public comment and hearings. However the TVA and TDEC want to move forward in the immediate future under emergency orders and forgo these precautionary measures.

The TVA Kingston Ash disaster has arguably released more hazardous material than any other toxic waste spill in this nation's history. The unprecedented magnitude and severity of the event and the long-term presence of the fly ash sludge in the affected area warrant careful scrutiny and long-term monitoring by the ATSDR. There are still too many unknowns and potential harmful health and environmental effects to ignore the need to take the appropriate precautionary measures to insure the health and safety of populations at risk.

The unprecedented scope of this spill is of great national importance and should be studied closely to safeguard the nation from possible future related events. Without question, this disaster has important implications for national public health policy. We request that ATSDR closely monitor this situation and take appropriate measures where deemed necessary.

According to section 104(i)(6)(B) of CERCLA, if the Administrator of ATSDR does not initiate the requested health assessment following the receipt of

this petition, the Administrator of ATSDR shall provide a written explanation of why a health assessment is not appropriate.

We appreciate your consideration of this petition and look forward to your response.

Sincerely,

Dr. Gregory V. Button
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Department of Anthropology
University of Tennessee, Knoxville
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Lamar Alexander, U.S. Senator
Barbara Boxer, U.S. Senator
Bob Corker, U.S. Senator

Harry Reid, U.S. Senator
Nancy Pelosi, Speaker of the U.S. House
Nancy Sutley, Chief Environmental Office to President Obama
Lisa Jackson, Administrator, U.S. EPA
Robert Tanner, Inspector, Senate Committee Environment and Public Works
Ben Webster, Ph.D., Subcommittee on Water Resources and Infrastructure
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